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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/063,471	04/26/2002	Julia Helena Anna Klinge	121130	1168

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EXAMINER

VARGAS, DIXOMARA

ART UNIT	PAPER NUMBER
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2859

DATE MAILED: 05/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/063,471

Applicant(s)

KLINGE ET AL.

Examiner

Dixomara Vargas

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 5-7, 10, 11, 13, 16-18, 21-23 and 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Fujita et al. (US 6,441,615).

With respect to claims 1 and 17, Fujita discloses a multiple channel array coil for magnetic resonance imaging (Figure 1-4), comprising: an anterior section (Figure 1, #30 and #52); and a posterior section (Figure 1, #32 and #50); said anterior and posterior sections displaced from one another about a first direction, and both of said anterior and posterior sections further comprising a left portion and a right portion displaced from one another about a second direction (Figure 1, sections #30, #52, #32 and #50), with each of said left and right portions further comprising a superior coil element and an inferior coil element displaced from one another about a third direction (Figure 1, sections #30, #52, #32 and #50).

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4. With respect to claims 2, 7, 13, 18, and 23, Fujita discloses each of said superior coil elements are arranged with an associated one of said inferior coil elements in an overlapping configuration (Figures 1-4).

5. With respect to claims 5, 10, 16, 21 and 26, Fujita discloses said left and right portions of said anterior section are symmetrically aligned over said left and right portions of said posterior section (Figures 1-4).

6. With respect to claim 6, Fujita discloses a multiple channel cardiac array coil for magnetic resonance imaging, comprising (Figures 1-4): an anterior section (Figure 1, #30 and #52); a posterior section (Figure 1, #32 and #50); and said anterior and posterior sections symmetrically arranged and displaced from one another about a first direction, both of said anterior and posterior sections further comprising a left portion and a right portion symmetrically arranged and displaced from one another about a second direction (Figure 1, sections #30, #52, #32 and #50), with each of said left and right portions further comprising a superior coil element and an inferior coil element displaced from one another about a third direction; wherein each of said superior and inferior coil elements are generally rectangular in shape and are formed from a generally flat, conductive material (Figure 1, sections #30, #52, #32 and #50).

7. With respect to claims 11 and 22, Fujita discloses a magnetic resonance imaging (MRI) system, comprising (Figure 1): a computer (Figure 1, #58); a magnet assembly for generating a polarizing magnetic field (Figure 1, #18); a gradient coil assembly for applying gradient waveforms to said polarizing magnetic field along selected gradient axes (Figure 1, #20 and #22); and a radio frequency (RF) transceiver system for applying RF energy to excite nuclear spins of an object to be imaged, and for thereafter detecting signals generated by excited nuclei

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of said object to be imaged, said RF transceiver system further comprising (Figure 1, sections #30, #52, #32 and #50): a multiple channel cardiac array coil having an anterior section and a posterior section (Figure 1, sections #30, #52, #32 and #50); said anterior and posterior sections displaced from one another about a first direction, and both of said anterior and posterior sections further comprising a left portion and a right portion displaced from one another about a second direction, with each of said left and right portions further comprising a superior coil element and an inferior coil element displaced from one another about a third direction; wherein signals detected by said multiple channel array coil are processed by said computer to produce MR images of said object to be imaged (Figure 1, sections #30, #52, #32 and #50).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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10. Claims 3, 4, 8, 9, 14, 15, 19, 20, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (US 6,441,615) in view of Oppelt et al. (US 4,945,321).

With respect to claims 3, 8, 14, 19 and 24, Fujita discloses the claimed invention as stated above in paragraph 3 except for each of the left and right portions are isolated from one another by transformer decoupling therebetween. However, Heid discloses the coil portions to be isolated from one another by transformer decoupling therebetween (Figure 3, #17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to isolate the coils with a transformer decoupling system as shown by Heid with Fujita's multiple channel array coil MRI system for the purpose of reducing the inductance of the coils while the coils are maintain independent of each other and keeping the maximum switching speeds of the fields as shown by Heid (Column 5, lines 20-42).

11. With respect to claims 4, 9, 15, 20 and 25, Fujita discloses said anterior section is isolated from said posterior section by preamplifier decoupling (Figure 1).

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (US 6,441,615) in view of King (US 6,559,642).

With respect to claim 12, Fujita discloses the claimed invention as stated above in paragraph 3 except for the multiple channel cardiac array coils being configured for sensitivity encoding (SENSE) imaging techniques. However, King the use of the sensitivity encoding (SENSE) imaging techniques (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use King's known sensitivity encoding (SENSE) imaging techniques with Fujita's multiple channel array coil MRI system for

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the purpose of using a known technique for canceling the signals (of the multiple coils) outside the field of view and removing the aliasing contribution by unfolding the data in consequence improving the image quality by estimating the coils sensitivity profile.

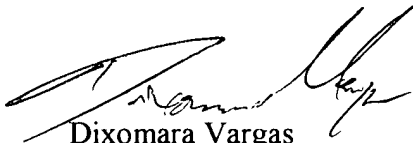
Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The additional prior art cited in the PTO 892 discloses NMR system with multiple coils in overlapping configurations.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dixomara Vargas whose telephone number is (703) 305-5705. The examiner can normally be reached on 8:00 am. to 4:30 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-0956.



Dixomara Vargas
Art Unit 2859
May 17, 2003



Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800